CLASS 588, HAZARDOUS OR TOXIC WASTE DESTRUCTION OR CONTAINMENT

SECTION I - CLASS DEFINITION

This is the generic class for (1) hazardous or toxic waste destruction by any means to include, heating, chemical action, or the interaction with any form of radiation; (2) permanent containment of hazardous or toxic waste by methods to include storage in a simple container, solidification, vitrification, cementation, and more elaborate methods of storage such as marine, tetonic, or extraterrestrial storage; (3) hazardous or toxic waste conversion by any means (e.g., chemical, physical, etc.) to an environmentally safe substance; and (4) preparation for destruction or containment as well as the actual destruction or containment.

Line With Classes Producing Desired Useful Product

A process which produces a desired product for an end use, e.g., by manufacturing, chemical reaction, or purification etc., is classified with the product produced and controls over Class 588 regardless of whether or not a toxic or hazardous waste is destroyed or contained as part of the process. Class 588 provides for a process which destroys or contains hazardous or toxic waste and whose products are intended only to be safely discarded or whose production is only incidental to the destruction or containment.

Line With Method Classes

Class 588 controls over general method classes for storing or containing waste which is too hazardous or toxic to be placed in an ordinary municipal landfill.

Line With Apparatus Classes

This class does not provide for apparatus. Apparatus is classified based on its function without regard to whether or not hazardous or toxic waste is the substance acted on. Significant disclosure to processes of treating hazardous or toxic waste in apparatus patents may be cross-referenced to Class 588 as appropriate. Some exemplary classes providing for apparatus employed in the processes of this class are as follows.

Line With Other Classes That Provide for Destroying Hazardous or Toxic Waste

Class 588 controls over general classes that are only incidental to the destruction or containment of hazardous or toxic waste.

SECTION II - NOTES TO THE CLASS DEFINITION

(1) Note. Chemical substances that move through commerce and are used or treated in some useful application are not considered to be hazardous or toxic waste. These substances may be considered hazardous or toxic waste in the event they are introduced into the environment in a manner not consistent with their intended utility.

(2) Note. Waste proper for classification in Class 588 is considered to be too hazardous or toxic for placement in an ordinary municipal landfill.

SECTION III - REFERENCES TO OTHER CLASSES

SEE OR SEARCH CLASS:

48, Gas: Heating and Illuminating, appropriate subclass for a process directed to the production of a combustible gas from hazardous or toxic waste. (see Line With Classes Producing Desired Useful Product.)

75, Specialized Metallurgical Processes, Compositions for Use Therein, Consolidated Metal Powder Compositions, and Loose Metal Particulate Mixtures, for processes of preparing or treating elemental metal employing hazardous or toxic waste as a raw material or agent. (see Line With Classes Producing Desired Useful Product.)

106, Compositions: Coating or Plastic, subclasses 600+ for the production of cement using hazardous or toxic waste. (see Line With Classes Producing Desired Useful Product.)

204, Chemistry: Electrical and Wave Energy, appropriate subclasses for the interaction of electrical and wave energy with hazardous or toxic waste. (see Line With Classes Producing Desired Useful Product.)

208, Mineral Oils: Processes and Products, subclasses 262.1+ for processes of removing halogen contaminants, e.g., PCB's from mineral oils. (see Line With Classes Producing Desired Useful Product.)

210, Liquid Purification or Separation, provides for the purification of water (liquids) as useful product even though hazardous or toxic waste

may be removed from or destroyed in the water (liquids). (see Line With Classes Producing Desired Useful Product.)

252, Compositions, subclasses 625+ for compositions that contain radioactive hazardous or toxic waste. (see Line With Classes Producing Desired Useful Product.)

422, Chemical Apparatus and Process Disinfecting, Deodorizing, Preserving, or Sterilizing, subclasses 1+ for processes of destruction of hazardous or toxic material, such as noxious micro-organisms, by disinfecting or sterilizing, when a desired useful product or article results (i.e., not a waste), and not elsewhere provided for. (see Line With Classes Producing Desired Useful Product.)

423, Chemistry of Inorganic Compounds, appropriate subclasses for recovering inorganic elements or compounds from hazardous or toxic waste. (see Line With Classes Producing Desired Useful Product.)

532, Organic Compounds, appropriate subclasses for the production of useful products from hazardous or toxic waste. (see Line With Classes Producing Desired Useful Product.)

935, Genetic Engineering: Recombinant DNA Technology, Hybrid or Fused Cell Technology and Related Manipulations of Nucleic Acids, for the method of use of genetically engineered cells in the destruction of hazardous or toxic waste, e.g., oil spill cleanup, etc., note subclass 59. For the use of cells containing a vector and or exogenous gene, per se, propagation thereof; other membrane encapsulated DNA, e.g., protoplast, etc., see subclasses 66+. (see Line With Classes Producing Desired Useful Product.)

976, Nuclear Technology, for the production of nuclear fuel and the assemblies of the fuel into reactors. (see Line With Classes Producing Desired Useful Product.)

34, Drying and Gas or Vapor Contact With Solids, for separation of liquid hazardous or toxic waste from solids and the process of using gases or vapors to contact solids for the removal of hazardous or toxic waste, see subclasses 1 through 42. (see Line With Method Classes.)

75, Specialized Metallurgical Processes, Compositions for Use Therein, Consolidated Metal Powder Compositions, and Loose Metal Particulate Mixtures, subclasses 507+ for the methods of adding hazardous or toxic waste to melting or molten iron and subclasses 585+ for methods of adding hazardous or toxic waste to nonferrous metals at above 300°C. (see Line With Method Classes.)

86, Ammunition and Explosive-Charge Making, subclass 50 for process of bomb disposal. (see Line With Method Classes.)

203, Distillation: Processes, Separatory, appropriate subclasses for separating a liquid mixture with one or more component being hazardous or toxic waste and subclasses 95+ for the additional use of water or steam in the separation. (see Line With Method Classes.)

204, Chemistry: Electrical and Wave Energy, appropriate subclass for processes using electrical and wave energy not involving hazardous or toxic waste. (see Line With Method Classes.)

210, Liquid Purification or Separation, provides for the methods used to purify water (liquids) even though hazardous or toxic waste may be removed from or destroyed in the water (liquids). For the destruction, per se, of hazardous or toxic waste, refer to Class 588, even when liquids (water) are involved, and when no liquid product (water) is recovered. (see Line With Method Classes.)

405, Hydraulic and Earth Engineering, subclass 129.1 for a process of disposing hazardous or toxic waste in the soil. (See Line With Method Classes.)

422, Chemical Apparatus and Process Disinfecting, Deodorizing, Preserving, or Sterilizing, subclasses 1+ for processes of sterilizing wastes not considered hazardous or toxic in the sense of Class 588, such as household garbage or waste. Class 588 provides for conversion (e.g., disinfection or sterilization) of hazardous or toxic waste to make such wastes into an environmentally safe substance. For example, sterilization of medical or dental waste to render such waste safe for landfill disposal is proper for Class 588, subclasses 215+. (see Line With Method Classes.)

935, Genetic Engineering: Recombinant DNA Technology, Hybrid or Fused Cell Technology and Related Manipulations of Nucleic Acids, appropriate subclasses for the methods used in producing altered organisms which can be used in the treatment of hazardous or toxic waste. (see Line With Method Classes.)

976, Nuclear Technology, for the methods used in the production of nuclear fuel, manufacturing of nuclear reactors, and nuclear technology in general. (see Line With Method Classes.)

86, Ammunition and Explosive-Charge Making, subclass 50 for apparatus used in bomb disposal. (see Line With Apparatus Classes.)

110, Furnaces, subclasses 235+ for apparatus used in the incineration of hazardous or toxic waste. (see Line With Apparatus Classes.)

196, Mineral Oils: Apparatus, appropriate subclasses for the apparatus used in the treating of hazardous or toxic waste. (see Line With Apparatus Classes.)

202, Distillation: Apparatus, appropriate subclasses for apparatus used in the treating of hazardous or toxic waste. (see Line With Apparatus Classes.)

204, Chemistry: Electrical and Wave Energy, subclasses 193+ for apparatus used in the treatment of hazardous or toxic waste. (see Line With Apparatus Classes.)

261, Gas and Liquid Contact Apparatus, appropriate subclasses for apparatus used in the treatment of gas or liquid hazardous or toxic waste. (see Line With Apparatus Classes.)

266, Metallurgical Apparatus, subclasses 200+ for apparatus useful in treating molten or melting metal with hazardous or toxic waste. (see Line With Apparatus Classes.)

373, Industrial Electrical Heating Furnaces, appropriate subclasses for electric heating furnaces used in the treatment of hazardous or toxic waste. (see Line With Apparatus Classes.)

405, Hydraulic and Earth Engineering, subclasses 128+ for the apparatus used in the storing of hazardous or toxic waste in the earth. (see Line With Apparatus Classes.)

422, Chemical Apparatus and Process Disinfecting, Deodorizing, Preserving, or Sterilizing, for apparatus acting on hazardous or toxic waste for disinfection or sterilization thereof. See subclasses 243+, particularly subclasses 292+ for treating a solid article or material with a "chemical" in a liquid, gaseous, or vapor state (e.g., steam sterilizers, steam is considered a "chemical" also when it disinfects, sterilizes, deodorizes, or preserves, since steam so used appears to have a function more than mere heating) wherein the article or material is recovered essentially unchanged from the treatment (a "chemical" is defined as a substance which has a function beyond that of another class, per se, e.g., drying, heating, cleaning, etc.; a recitation that a substance disinfects, sterilizes, deodorizes, or preserves will cause the substance to be considered a "chemical" unless accompanied by positive disclosure that the disinfecting, sterilizing, deodorizing, or preserving is done only by a function provided for elsewhere; e.g., heating, etc.), and subclasses 307+ for heat treating vessel with heating means, not elsewhere provided for. (see Line With Apparatus Classes.)

935, Genetic Engineering: Recombinant DNA Technology, Hybrid or Fused Cell Technology and Related Manipulations of Nucleic Acids, subclasses 85+ for apparatus used in the genetic engineering of cells for use in treating hazardous or toxic waste. (see Line With Apparatus Classes.)

976, Nuclear Technology, for the production of nuclear reactors, associated apparatus, and arrangements thereof. (seeLine With Apparatus Classes.)

252, Compositions, subclasses 625+ for products (compositions) that contain radioactive hazardous or toxic waste. Class 252 also provides for containment of radioactive waste. (see Line With Other Classes That Provide for Destroying Hazardous or Toxic Waste.)

423, Chemistry of Inorganic Compounds, subclasses 210+ for the modifying or removing of a component of normally gaseous mixture containing hazardous or toxic waste. (see Line With Other Classes That Provide for Destroying Hazardous or Toxic Waste.)

435, Chemistry: Molecular Biology and Microbiology, subclass 262.5 for the methods of making micro-organisms, per se, and the methods of using the micro-organisms in the treatment of hazardous or toxic waste. (see Line With Other Classes That Provide for Destroying Hazardous or Toxic Waste.)

SECTION IV - GLOSSARY

Terms used throughout the schedule and definitions are to have the meaning ascribed below. Generally accepted or commonly used “art” terms retain their meaning found in their everyday usage and are not found in this glossary. Certain specialized terms are employed in these subclasses and they have been given definitions altered to meet the needs of this class. Some or all of the terms may be broader or more restricted as well as different in meaning compared to normal usage.

ALKALI METALS

The metal elements in group I of the periodic system consisting of Li, Na, K, Rb, and Cs.

ALKALINE EARTH METALS

The metal elements in group II of the periodic system consisting of Mg, Ca, Sr, and Ba.

CATALYST

A substance which either increases or decreases the speed of a chemical reaction.

CHALCOGEN

Also known as chalcogenides, specifically O, S, Se, or Te.

COMPOSITION

A mixture of material(s) such as elements, compounds, etc. which materials are not present in a ratio of small whole numbers based on molar ratios, i.e., mixtures.

COMPOUND

A substance whose molecules consist of unlike atoms, whose constituents cannot be separated by physical means, whose properties are entirely different from those of its constituent elements, and which contains definite proportions of its constituent elements, depending on their atomic weights.

CONTAINMENT

To hold or enclose totally to prevent any leaching or leaking of the hazardous or toxic material into the environment, and any use of a container that is destroyed with the waste.

CONTAMINATE

To make a first substance impure (hazardous or toxic) by contact with or by the addition of a second or more substances.

DESTROYING

To convert the hazardous or toxic waste to an environmentally safe substance to include the steps used to prepare the waste for destruction as well as the actual destruction.

ENCAPSULATING

To immobilize hazardous or toxic waste materials by any means to include vitrification, combining with organoclay and mixing, adding a cement material, or enclosing in a container the hazardous or toxic waste material. The hazardous or toxic waste material is held in place and is not permitted to be leached or leaked out into the environment.

ENVIRONMENTALLY SAFE SUBSTANCE

Is any material that in any of its chemical or physical interactions with the environment results in no measurable adverse effects or degradations on the environment.

HALOGENS

The elements (F, Cl,Br, I, or At).

HAZARDOUS WASTE

Materials that when present in the environment produce for man and other living organisms an acute and/or cumulative effect that is a dangerous, risky, or perilous environmental situation in so far as the physiological well being of the organism is concerned (e.g., caustic chemicals, irritants, cancer causing agents, and other tumor producing materials).

HEAVY METAL

A metal other than the following (light) metals, lithium (Li), sodium (Na), Potassium (K), Rubidium (Rb), Cesium (Cs), Francium (Fr), Calcium (Ca), Strontium (Sr), Barium (Ba), Beryllium (Be), Magnesium (Mg), and Aluminum (Al).

IMMOBILIZE

To contain the hazardous or toxic waste by any means that keeps the hazardous or toxic waste in a matrix or container such as cement, organoclay, glass, or in an actual physical container.

NOBLE GASES

The elements of the periodic table that consist of He, Ar, Kr, Xe, and Rn which have no valency and combine only with great difficulty, if at all, with other elements.

INCINERATE

To burn to highly oxidized ashes. The oxidation is chemically near completion.

LEACHING

The processes of extracting or dissolving a soluble component from a mixture by contacting the mixture with a solvent, resulting in dissolution or solution of the solubles and leaving an insoluble material.

Note. Solution of a substance in a normally solid, molten material is not considered to be leaching as defined above.

ORGANIC COMPOUND

A compound as defined in the definition of Class 260, Chemistry of Carbon Compounds as qualified by (34) Note.

ORGANIC METAL CONTAINING COMPOUND

Any carbon containing compound as defined by the definition of Class 260, in which the carbon compound contains a metal.

RADIOACTIVE

Any element capable of giving off rays or subatomic particles by spontaneous disintegration. The radioactive elements are usually those having an atomic number of 84 or greater and the phenomenon of radioactivity is not affected by chemical or physical influences or matter adulterated by radioactivity.

RARE EARTHS

The compounds of the elements found on the periodic chart at atomic numbers 21, 39, or 57-71 inclusive.

SORPTION

The ability of a substance to undergo a surface reaction that causes that substance to be able to retain other substances, these other substances are generally gases, liquids, or dissolved materials.

SLUDGE

Residue (usually viscous) from an industrial, home, or agricultural process commonly containing heavy metals, sulfur compounds, phosphorus compounds, nitrogen compounds, and halogenated compounds any of which may be organic, however these specific compounds are not required.

TOXIC WASTE

Materials that are direct physiological poisons to living organisms (e.g., pesticides, heavy metal ion solutions, and other organic and inorganic materials) that are poisonous to life.

VOLATILIZING

Converting a normally solid or liquid material into a gas or vapor state; mere evaporation of water or other solvents is included under this definition.

SUBCLASSES

1 DESTRUCTION OR CONTAINMENT OF RADIOACTIVE WASTE:
This subclass is indented under the class definition. Product and process wherein radioactive material that is intended to be disposed of is transformed to a condition facilitating its destruction or disposal or contained so as to hold or enclose totally to prevent any leaching or leaking of radioactivity into the environment.

2 By fixation in stable solid media:
This subclass is indented under subclass 1. Subject matter wherein the radioactive material is immobilized in a solid medium.

(1) Note. Immobilization is on either a molecular or particulate level, the radioactive material permeating or being part of the whole mass.

3 Cement, concrete, or hydraulic setting:
This subclass is indented under subclass 2. Subject matter wherein the solid media is concrete, cement containing, or hydraulic setting composition.

4 With additional solid material to enhance fixation of radioactivity:
This subclass is indented under subclass 3. Subject matter wherein the concrete, cement containing, or hydraulically settable composition contains an additional solid material that enhances retention of the radioactive material to leaking or leaching.

(1) Note. The additional solid does not participate or influence the hydraulically settable nature of the solid media.

5 Bituminous:
This subclass is indented under subclass 2. Subject matter wherein the solid media is butimen, asphalt, or tarlike.

6 Resin or polymer; e. g., cellulose, polyethylene:
This subclass is indented under subclass 2. Subject matter wherein the solid media is a natural or synthetic resin or a polymer.

7 Ion exchange resin:
This subclass is indented under subclass 6. Subject matter wherein the solid media is a solid resin material with chemically bound ionic groups capable of exchanging ion with radioactive contaminant ionic groups.

8 Polymer derived from ethylenically unsaturated monomer:
This subclass is indented under subclass 6. Subject matter wherein the polymer is derived only from ethylenically unsaturated monomer(s); i.e., wherein the monomer contains a c=c which undergoes addition polymerization to form long c-c chains.

9 Clay or clay-like:
This subclass is indented under subclass 2. Subject matter wherein the solid media is a fine grained naturally occurring earthy material or artificial composition having generally, equivalent chemical and physical properties.

10 Ceramic or ceramic-like:
This subclass is indented under subclass 2. Subject matter wherein the solid media is an inorganic composition that is to be hardened by heat treatment or which has been so hardened.

11 Glass, glass-like, or vitreous:
This subclass is indented under subclass 10. Subject matter wherein the ceramic is a glassy or vitrified media.

12 Boron containing:
This subclass is indented under subclass 11. Subject matter wherein the glassy or vitreous media contains boron.

13 Ion exchange material:
This subclass is indented under subclass 2. Subject matter wherein the solid media is a nonresinous material having the ability or property, of adsorbing or exchanging cations and/or anions with the radioactive material.

14 Silicon containing:
This subclass is indented under subclass 2. Subject matter wherein the solid media contains silicon.

15 Metal containing:
This subclass is indented under subclass 2. Subject matter wherein the solid media contains free metal or combined metal and includes alleys and metal compounds.

(1) Note. Rock and synthetic rock are included in this subclass because of their mixed metal oxide composition.

SEE OR SEARCH THIS CLASS, SUBCLASS:
10, for similar compositions hardened by heat.

16 Surrounding with specified material or structure:
This subclass is indented under subclass 1. Subject matter wherein the containment surrounding the radioactive material is defined by its structure or by the material forming the containment or container means.

17 Geological:
This subclass is indented under subclass 1. Subject matter wherein the radioactive material containment is accomplished by placing it in the ground, bore hole, underwater, or space or orbit.

18 Chemical conversion to a table solid:
This subclass is indented under subclass 1. Subject matter wherein the radioactive material as it occurs in the waste is chemically converted to a solid that is more readily disposable; e.g., precipitation as an insoluble solid.

19 Incineration, calcination, pyrolyzing to obtain solid residue:
This subclass is indented under subclass 18. Subject matter wherein the radioactive material is burned, calcined, or pyrolyzed to a solid residue to facilitate disposal.

20 Treating radioactive liquid:
This subclass is indented under subclass 1. Subject matter wherein liquid, flowable radioactive waste material is placed in better condition for disposal.

(1) Note. This subclass includes treatment or slurries or solids suspended in a liquid.

SEE OR SEARCH CLASS:
159, Concentrating Evaporators, for processes of concentrating solids held in solution or suspension by evaporation of the liquid containing the solids and isolation of the concentrate obtained.

200 CHEMICAL OR GERM WARFARE AGENTS DESTROYED:
This subclass is indented under the class definition. Process wherein a material intended to be employed as a chemical warfare agent is the hazardous or toxic substance destroyed or converted.

(1) Note. Included hereunder are the destruction, containment, and conversion of nerve gases and mustard agents.

(2) Note. This subclass includes the destruction, containment, and conversion of micro-organisms intended to be used in warfare, e.g., germ warfare agents.

SEE OR SEARCH THIS CLASS, SUBCLASS:
258, for processes of storage or containment of pathogenic organisms not intended for use as warfare agents, e.g., virus, bacteria, and medical waste.

SEE OR SEARCH CLASS:
422, Chemical Apparatus and Process Disinfecting, Deodorizing, Preserving, or Sterilizing, appropriate subclasses for the methods and apparatus used in destroying micro-organisms.
435, Chemistry: Molecular Biology and Microbiology, appropriate subclasses for processes whereby a micro-organism is used in degradation of hazardous or toxic waste, e.g., degrading PCB'S.

201 MOLTEN MEDIA USED (E.G., METAL):
This subclass is indented under the class definition. Process wherein a material which is normally solid at room temperature is used in a molten state to destroy or convert a hazardous or toxic waste to an environmentally safe substance.

(1) Note. The molten medium employed is most commonly molten metal or molten salts.

SEE OR SEARCH CLASS:
75, Specialized Metallurgical Processes, Compositions for Use Therein, Consolidated Metal Powder Compositions, and Loose Metal Particulate Mixtures, appropriate subclasses for a process which produces elemental metal as a desired product and which may also destroy hazardous or toxic waste.
201, Distillation: Processes, Thermolytic, subclass 11 for the use of liquid metal in a thermolytic distillation for purposes other than the destruction of hazardous or toxic waste.
423, Chemistry of Inorganic Compounds, digest 12 for the use of molten media in chemical reactions.

202 EXPLOSIVES, PROPELLANTS, OR PYROTECHNICS DESTROYED:
This subclass is indented under the class definition. Process wherein the hazardous or toxic waste acted upon is an explosive, propellant (e.g., for rocket or gun), or a pyrotechnic material (e.g., fireworks).

(1) Note. Propellants that are compressed gases or vaporized liquids that are used to force materials from containers or that are used to aid in the formation of a foam are not included in this subclass. The destruction or containment of these propellants is placed below.

SEE OR SEARCH CLASS:

86, Ammunition and Explosive-Charge Making, subclass 50 for process of bomb disposal.

110, Furnaces, subclass 237 for incinerators intended for use with explosive material.

149, Explosive and Thermic Compositions or Charges, subclass 124 for an art collection of methods reclaiming or disposing of explosive or thermic charges or component materials thereof.

203 Using added reactive materials (e.g., acids, bases, hydrogen, etc.):

This subclass is indented under subclass 202. Processes wherein the explosive propellant or pyrotechnic is destroyed or converted into an environmentally safe substance by reacting with an added material.

(1) Note. The added material may be, for example, acids, bases, or hydrogen.

204 ELECTRODIALYSIS OR ELECTROLYTIC DEGRADATION OR CONVERSION:

This subclass is indented under the class definition. Process wherein electrodialysis or electrolytic degradation or conversion is used to destroy or convert hazardous or toxic waste into an environmentally safe substance.

SEE OR SEARCH CLASS:

204, Chemistry: Electrical and Wave Energy, appropriate subclasses for processes of electrodialysis or electrolysis.

210, Liquid Purification or Separation, appropriate subclasses for processes in general for liquid purification or separation of liquid phases. The line between Class 210 and Class 588 is that, if there is a specific statement in the claim that hazardous or toxic waste is destroyed, separated, or converted into an environmentally safe substance, the process is placed in Class 588; however, if purified liquid, e.g., water, is obtained as a desired product, place the process in Class 210.

205 ORGANIC SUBSTANCE DESTROYED:

This subclass is indented under the class definition. Process for destroying or converting hazardous or toxic waste which contains either two atoms of carbon bonded to each other, one atom of carbon bonded to an atom of hydrogen or halogen, or one atom of carbon bonded to at least one atom of nitrogen by a single or double bond into a substance or substances which is environmentally safe.

(1) Note. Certain substances falling under the above definition are excluded from this and indented subclasses. Their destruction and conversion are classified in the subclasses below, to wit; hydrocyanic acid, cyanogen, isocyanic acid, cyanamide, cyanogen halides, isothiocyanic acid, fulmenic acid, and metal carbides.

(2) Note. The substance(s) that is destroyed maybe a mixture of hazardous or toxic waste with nonhazardous or nontoxic waste. Either component of the mixture being destroyed is sufficient for classification in subclass 205. Mandatory XR (cross-reference) into subclass(es) for the actual hazardous or toxic substance (component) destroyed in noted.

(3) Note. If the hazardous or toxic material is destroyed and a purified compound or composition is recovered search the appropriate compound or composition class.

206 Halogen attached directly to carbon by nonionic bonding:

This subclass is indented under subclass 205. Process wherein the organic substance destroyed or converted includes a compound which contains an atom of halogen attached directly to an atom of carbon by nonionic bonding.

(1) Note. The substances falling in this subclass are materials that are generally aliphatic and have the halogen directly attached to nonaromatic carbon.

SEE OR SEARCH CLASS:

568, Organic Compounds, appropriate subclasses for the production of halogen containing organic compounds.

570, Organic Compounds, appropriate subclasses for the production of halogen containing organic compounds.

585, Chemistry of Hydrocarbon Compounds, for process employing halogen containing compounds in the manufacture of hydrocarbons.

207 Halogen attached directly to benzene ring by nonionic bonding (e.g., PCB's):

This subclass is indented under subclass 206. Processes wherein the halogenated organic substance destroyed or converted includes a compound which contains an atom of halogen attached directly to a benzene ring by nonionic bonding.

208 Hydropyrolysis or destructive steam gasification:

This subclass is indented under subclass 207. Process wherein water or steam is used in a thermal process for converting the halogen containing compound into an environmentally safe substance.

SEE OR SEARCH CLASS:

48, Gas: Heating and Illuminating, subclasses 197+ for processes of gasification to produce a heating or illuminating gas.

201, Distillation: Processes, Thermolytic, subclasses 32+ for the addition of disparate gaseous material to a carbonizing zone.

202, Distillation: Apparatus, subclasses 96+ for thermolytic type apparatus.

203, Distillation: Processes, Separatory, subclasses 28+ for the processes with a chemical reaction and subclasses 95+ for the addition of water or steam.

431, Combustion, subclass 4 for feeding a flame modifying additive and subclass 5 for burning waste gas.

209 Heating or vacuum used to drive off or produce a volatile substance:

This subclass is indented under subclass 207. Process wherein the aromatic halogenated substance is destroyed by heating or vacuum to drive off or produce a volatile environmentally safe substance from hazardous or toxic waste.

210 Using ionizing radiation, electrical energy, magnetic force, radiation or sonic energy (e.g., laser, plasma, microwave, or ultrasonic):

This subclass is indented under subclass 207. Process wherein an aromatic halogenated substance is destroyed with ionizing radiation, electrical energy, magnetic force, radiation or sonic energy for destruction or conversion into an environmentally safe substance.

SEE OR SEARCH THIS CLASS, SUBCLASS:

204, for the use of electrodialysis or electrolytic degradation.

211 Using a gaseous heat carrier:

This subclass is indented under subclass 210. Process wherein a gaseous heat carrier is used in the hazardous or toxic waste treating process to either capture, recycle, or add external heat to the process.

212 Using ionizing radiation; electrical energy, magnetic force, radiation, or sonic energy (e.g., laser, plasma, microwave, or ultrasonic):

This subclass is indented under subclass 206. Process wherein ionizing radiation electrical energy, magnetic force, radiation, or sonic energy is used for converting hazardous or toxic waste into an environmentally safe substance.

213 Heating or vacuum used to drive off or produce a volatile substance (e.g., hydropyrolysis or destructive steam gasification):

This subclass is indented under subclass 206. Process wherein the halogenated substance is treated by heating or vacuum for destruction or conversion into an environmentally safe substance.

(1) Note. This subclass includes hydropyrolysis and destructive stream gasification.

214 Using a gaseous heat carrier:
This subclass is indented under subclass 213. Process wherein a gaseous heat carrier used in the hazardous toxic waste treating process to either capture, recycle or add heat to the process.

215 Chalcogen containing (O, S, Se, or Te):
This subclass is indented under subclass 205. Process wherein a chalcogen (O, S, Se, or Te) substance containing hazardous or toxic waste is destroyed or converted into an environmentally safe substance.

SEE OR SEARCH THIS CLASS, SUBCLASS:

239, for the destruction of inorganic substances containing chalcogen (O, S, Se, or Te) in hazardous or toxic waste.

SEE OR SEARCH CLASS:

208, Mineral Oils: Processes and Products, subclasses 208+ for sulfur removal from mineral oils.

423, Chemistry of Inorganic Compounds, appropriate subclasses for the production of the desired inorganic substance or product, subclasses 508+ for substances or products containing selenium or tellurium, subclasses 511+ for substances or products containing sulfur, and subclasses 579+ for substances or products containing oxygen.

532, Organic Compounds, appropriate subclasses for the chalcogen (O, S, Se, or Te) containing compounds.

585, Chemistry of Hydrocarbon Compounds, for processes employing chalcogen (O, S, Se, or Te) containing compounds in the manufacture of hydrocarbons containing the chalcogen. subclasses 240+ for the production of a hydrocarbon mixture from refuse or vegetation.

216 Heating or vacuum used to drive off or produce a volatile substance:
This subclass is indented under subclass 215. Process wherein heating or vacuum is used to drive off or produce a volatile environmentally safe substance.

217 Using a gaseous heat carrier:
This subclass is indented under subclass 216. Process wherein a gaseous heat carrier is used in the hazardous or toxic waste treating process to either capture, recycle, or add external heat to the process.

218 Reacting with chemical agents:
This subclass is indented under subclass 215. Process employing an additional chemical material to react with hazardous or toxic waste.

219 Using ionizing radiation, electric energy, magnetic force, radiation or sonic energy (e.g., laser, plasma, microwave, or ultrasonic):
This subclass is indented under subclass 218. Process wherein ionizing radiation, electric energy, magnetic force, radiation, or sonic energy is employed to aid in the reaction.

SEE OR SEARCH THIS CLASS, SUBCLASS:

204, for the use of electrodialysis or electrolytic degradation.

220 Heating or vacuum used to drive off or produce a volatile substance from waste containing N, P, As, Sb, or Bi:
This subclass is indented under subclass 205. Process wherein the organic hazardous or toxic waste contains N, P, As, Sb, or Bi and is destroyed by the use of heat or vacuum to drive off or produce a volatile environmentally safe substance from the hazardous or toxic waste.

221 Reacting waste containing N, P, As, Sb, or Bi with chemical agents:
This subclass is indented under subclass 205. Process wherein the organic hazardous or toxic waste contains N, P, As, Sb, or Bi and is destroyed by the addition of a chemical material to react with the hazardous or toxic waste.

SEE OR SEARCH CLASS:

210, Liquid Purification or Separation, appropriate subclasses for separation of liquids from any contaminant; subclass 749 for the use of chemical treatment; and subclasses 911+, an art collection, for the removal of cumulative poison from a liquid.

423, Chemistry of Inorganic Compounds, subclasses 87+ for the production of Sb, Bi, or As or compounds thereof; subclasses 299+ for the production of phosphorus and its compounds; and subclasses 351+ for the production of nitrogen and its compounds.

222 Using ionizing radiation, electrical energy, magnetic force, radiation, or sonic energy (e.g., laser, plasma, microwave, or ultrasonic):

This subclass is indented under subclass 221. Process wherein the hazardous or toxic waste is also treated by the use of ionizing radiation, electrical energy, magnetic force, radiation, or sonic energy for converting waste into an environmentally safe substance.

223 Metal containing:

This subclass is indented under subclass 205. Process wherein the organic hazardous or toxic waste contains a metal.

SEE OR SEARCH THIS CLASS, SUBCLASS:

231, for the destruction of an inorganic heavy metal containing hazardous or toxic waste.

SEE OR SEARCH CLASS:

423, Chemistry of Inorganic Compounds, subclasses 1 through 209 for treating to obtain a desired metal containing compound.

532, Organic Compounds, appropriate classes for the production of a desired metal containing organic compound.

224 Reacting with chemical agent:

This subclass is indented under subclass 223. Process employing an additional chemical material to react with the hazardous or toxic waste.

SEE OR SEARCH CLASS:

210, Liquid Purification or Separation, appropriate subclasses for the separation of liquid from any contaminant; subclasses 749+ for the use of chemical treatment; and subclasses 911+, an art collection, for the removal of cumulative poison from a liquid.

225 Using ionizing radiation, electrical energy, magnetic force, radiation, or sonic energy (e.g., laser, plasma, microwave, or ultrasonic):

This subclass is indented under subclass 224. Process wherein ionizing radiation, electrical energy, magnetic force, radiation, or sonic energy is used for converting hazardous or toxic waste into an environmentally safe substance.

226 Hydropyrolysis or destructive steam gasification:

This subclass is indented under subclass 205. Processes wherein water or steam is used in a thermal process for destroying or converting hazardous or toxic waste into an environmentally safe substance.

227 Using ionizing radiation, electrical energy, magnetic force, radiation or sonic energy (e.g., laser, plasma microwave, or ultrasonic):

This subclass is indented under subclass 205. Processes wherein the substance destroyed is also treated with ionizing radiation, electrical energy, magnetic force, radiation, or sonic energy for destruction or conversion into an environmentally safe substance.

SEE OR SEARCH THIS CLASS, SUBCLASS:

204, for the use of electrodialysis or electrolytic degradation.

228 Heating or vacuum used to drive off or produce a volatile substance:

This subclass is indented under subclass 205. Processes wherein the hazardous or toxic waste is destroyed by heating or vacuum to drive off or produce a volatile environmentally safe substance.

229 Using a solid heat carrier:
This subclass is indented under subclass 228. Processes wherein a solid heat carrier is heated by the hazardous or toxic waste destroying process and the heat is recycled or heated solids are added to the hazardous or toxic waste destroying process to add heat to the process.

230 Using a gaseous heat carrier:
This subclass is indented under subclass 228. Process wherein a gaseous heat carrier is used in the hazardous or toxic waste treating process to either capture, recycle, or add external heat to the process.

231 HEAVY METAL CONTAINING SUBSTANCE DESTROYED:
This subclass is indented under the class definition. Process wherein the hazardous or toxic waste destroyed or converted into an environmentally safe substance contains a heavy metal.

(1) Note. The substance(s) that is destroyed maybe a mixture of hazardous or toxic waste with nonhazardous or nontoxic waste. Either component of the mixture being destroyed is sufficient for classification in subclass 231. Mandatory XR (cross-reference) into subclass(es) for the actual hazardous or toxic substance (component) destroyed is noted.

SEE OR SEARCH CLASS:
75, Specialized Metallurgical Processes, Compositions for Use Therein, Consolidated Metal Powder Compositions, and Loose Metal Particulate Mixtures, subclasses 414 through 709 for the production of free metal using a process which takes place at above 300° C and subclasses 710-745 for the production of free metal employing temperatures below 300° C.
423, Chemistry of Inorganic Compounds, subclasses 1 through 154 for treating a mixture to obtain a desired metal containing compound.

232 Magnetic separation:
This subclass is indented under subclass 231. Process which includes a step for magnetic separation.

SEE OR SEARCH CLASS:
209, Classifying, Separating, and Assorting Solids, subclasses 12+ for combined operations including the use of magnetic operations; subclasses 509+ for sorting special items, and certain methods and apparatus some of which use magnetic properties and note subclasses 212 through 232 for magnetic separation, per se (Class 588 provides for the magnetic separation of any hazardous or toxic waste in combination with the destruction of the waste).

233 Hydropyrolysis or destructive steam gasification:
This subclass is indented under subclass 231. Process wherein water or steam is used in a thermal process for destroying hazardous or toxic waste or converting hazardous or toxic waste into an environmentally safe substance.

234 Heating or vacuum used to drive off or produce a volatile substance:
This subclass is indented under subclass 231. Process wherein the hazardous or toxic waste is destroyed by heating or vacuum to drive off or produce a volatile environmentally safe substance.

235 Using a gaseous heat carrier:
This subclass is indented under subclass 234. Process wherein a gaseous heat carrier is used in the hazardous or toxic waste treating process to either capture, recycle, or add external heat to the process.

236 Reacting with chemical agent:
This subclass is indented under subclass 231. Process wherein an additional chemical material is employed to react with the hazardous or toxic waste.

SEE OR SEARCH CLASS:
210, Liquid Purification or Separation, subclasses 749+ for a chemical treatment process.

237 Using ionizing radiation electrical energy, magnetic force, radiation, or sonic energy

(e.g., laser, plasma, microwave, or ultrasonic):
This subclass is indented under subclass 236. Process wherein ionizing radiation electrical energy, magnetic force, radiation, or sonic energy is used for converting hazardous or toxic waste into an environmentally safe substance.

238 CHALCOGEN CONTAINING SUBSTANCE DESTROYED (O, S, Se, or Te):
This subclass is indented under the class definition. Process wherein the hazardous or toxic waste destroyed or converted into an environmentally safe substance contains a chalcogen (O, S, Se, or Te).

(1) Note. The substance(s) that is destroyed maybe a mixture of hazardous or toxic waste with nonhazardous or nontoxic waste. Either component of the mixture being destroyed is sufficient for classification in subclass 238. Mandatory XR (cross-reference) into subclass(es) for the actual hazardous or toxic substance (component) destroyed is noted.

SEE OR SEARCH THIS CLASS, SUBCLASS:
215, for the treatment of organic substances containing chalcogen (O, S, Se, or Te) in the hazardous or toxic waste destroyed.

SEE OR SEARCH CLASS:
210, Liquid Purification or Separation, appropriate subclasses for processes in general for liquid purification or separation of liquid phases. The line between Class 210 and Class 588 is that, if there is a specific statement in the claim that hazardous or toxic waste is destroyed, separated, or converted into an environmentally safe substance, the process is placed in Class 588; however, if purified liquid, e.g., water, is obtained as a desired product, place the process in Class 210.
423, Chemistry of Inorganic Compounds, appropriate subclasses for the production of the desired inorganic substance or product, subclasses 508+ for substance or products containing selenium or tellurium, subclasses 511+ for substances or products containing sulfur, and subclasses 579+ for substances or products containing oxygen.

239 Hydropyrolysis or destructive steam gasification:
This subclass is indented under subclass 238. Process wherein water or steam is used in a thermal process for converting waste into an environmentally safe substance.

240 Heating or vacuum used to drive off or produce a volatile substance:
This subclass is indented under subclass 238. Process wherein the chalcogen (O, S, Se, or Te) containing substance is treated by heating or vacuum for destruction or conversion into an environmentally safe substance.

241 Using a gaseous heat carrier:
This subclass is indented under subclass 240. Process wherein a gaseous heat carrier is used, in the hazardous or toxic waste treating process, to either capture, recycle, or add external heat to the process.

242 Reacting with chemical agent:
This subclass is indented under subclass 238. Process wherein an additional chemical material is employed to react with the hazardous or toxic waste.

243 Using ionizing radiation, electrical energy, magnetic force, radiation or sonic energy (e.g., laser, plasma, microwave, or ultrasonic):
This subclass is indented under subclass 242. Process wherein ionizing radiation, electrical energy, magnetic force, radiation, or sonic energy is used for converting hazardous or toxic waste into an environmentally safe substance.

SEE OR SEARCH THIS CLASS, SUBCLASS:
204, for the use of electrodialysis or electrolytic degradation.

244 N or P Containing Substance Destroyed:
This subclass is indented under the class definition. Process wherein hazardous or toxic waste substances containing nitrogen or phosphorus

are destroyed or converted into an environmentally safe substance.

SEE OR SEARCH CLASS:

210, Liquid Purification or Separation, appropriate subclasses for processes in general for liquid purification or separation of liquid phases. The line between Class 210 and Class 588 is that, if there is a specific statement in the claim that hazardous or toxic waste is destroyed, separated, or converted into an environmentally safe substance, the process is placed in Class 588; however, if purified liquid, e.g., water, is obtained as a desired product, place the process in Class 210.

423, Chemistry of Inorganic Compounds, subclasses 299+ for the production of phosphorus or phosphorus compounds and subclasses 351+ for the production of nitrogen or nitrogen compounds.

245 Heating or vacuum used to drive off or produce a volatile substance:

This subclass is indented under subclass 244. Process wherein hazardous or toxic substances containing N or P are destroyed or converted into an environmentally safe substance.

(1) Note. This subclass includes hydropyrolysis and destructive steam gasification.

246 Reacting with chemical agents:

This subclass is indented under subclass 244. Process employing an additional chemical material to react with the hazardous or toxic waste.

SEE OR SEARCH CLASS:

423, Chemistry of Inorganic Compounds, subclasses 351+ for the production of nitrogen or compound thereof and subclasses 299+ for the production of phosphorus or compound thereof.

247 Using ionizing radiation electrical energy, magnetic force, radiation, or sonic energy, e.g., laser, plasma, microwave, and ultrasonic:

This subclass is indented under subclass 246. Process wherein ionizing radiation electrical energy, magnetic force, radiation, or sonic energy is used for converting hazardous or toxic waste into an environmentally safe substance.

248 HALIDE CONTAINING SUBSTANCE DESTROYED:

This subclass is indented under the class definition. Process wherein hazardous or toxic waste which contains a halide is destroyed or converted into an environmentally safe substance.

(1) Note. The substance(s) that is destroyed maybe a mixture of hazardous or toxic waste with nonhazardous or nontoxic waste. Either component of the mixture being destroyed is sufficient for classification in subclass 231. Mandatory XR (cross-reference) into subclass(es) for the actual hazardous or toxic substance (component) destroyed is noted.

SEE OR SEARCH CLASS:

210, Liquid Purification or Separation, appropriate subclasses for processes in general for liquid purification or separation of liquid phases. The line between Class 210 and Class 588 is that, if there is a specific statement in the claim that hazardous or toxic waste is destroyed, separated, or converted into an environmentally safe substance, the process is placed in Class 588; however, if purified liquid, e.g., water, is obtained as a desired product, place the process in Class 210.

423, Chemistry of Inorganic Compounds, subclasses 462+ for the production of halogen or compounds containing halogen.

249 CONTAINMENT:

This subclass is indented under the class definition. Processes wherein the hazardous or toxic waste is confined in a permanent facility by means such that the waste is not permitted to move or migrate from the permanent facility. Additionally, the hazardous or toxic waste can be contained in a monolithic type structure.

(1) Note. The containment also includes the processes of producing monoliths which when stored in (moved to) a facility are themselves nonleaching and in no way enter or contaminate the facility environment or the outside environment.

SEE OR SEARCH CLASS:

53, Package Making, appropriate subclasses for methods or apparatus used in package making to contain hazardous or toxic waste.

206, Special Receptacle or Package, subclasses 528+ for ampule, capsule, pellet, or granule containing hazardous or toxic waste.

220, Receptacles, subclasses 62.11+ for multilayer barrier structure intended to contain hazardous or toxic waste.

428, Stock Material or Miscellaneous Articles, subclass 2 for compacted trash or refuse bundle which may include hazardous or toxic waste and subclasses 443+ for asbestos containing articles.

250 Geologic marine or extraterrestrial storage and containment (e.g., tetonic, volcanic, deep natural, manmade earth cavity, submarine placement sites, lunar, earth orbital, and solar placement):

This subclass is indented under subclass 249. Process wherein the storage or containment of the hazardous or toxic waste is accomplished by the following methods, e.g., descending tetonic plates, active volcanoes, caves, salt caverns, bore holes, abandoned mines, submarine dumping, earth orbital storage, lunar storage, and the use of decaying solar orbits to require the waste to fall into the sun.

251 Treating a solid (e.g., clay, slag, spent sorbent, active carbon, etc.) to prevent gas emissions:

This subclass is indented under subclass 249. Processes wherein solids are treated to prevent the emissions of hazardous or toxic gas.

(1) Note. Included herein is the treatment of slag heaps to prevent the emissions of hazardous or toxic gas.

SEE OR SEARCH CLASS:

65, Glass Manufacturing, subclasses 19+ for the utilization of slag.

106, Compositions: Coating or Plastic, subclasses 624+, 714+, and 789+ for utilization of slag in plastic compositions.

501, Compositions: Ceramic, subclass 28 and 36 for ceramic compositions using slag.

252 Solidification, vitrification, or cementation:

This subclass is indented under subclass 249. Processes wherein containment is accomplished by the use of solidification, vitrification, or cementation as a means of immobilizing hazardous or toxic waste.

(1) Note. Solidification included herein is any process that will produce a solid phase nonleachable product.

(2) Note. Vitrification included herein is any process that will produce a solid phase nonleachable glass like noncrystalline product.

(3) Note. Cementation included herein is any process that will produce a solid phase nonleachable hydraulic setting product.

SEE OR SEARCH CLASS:

65, Glass Manufacturing, appropriate subclasses for the methods of producing glass.

106, Compositions: Coating or Plastic, subclasses 600+ for alkali metal silicate containing compositions and subclasses 638+ for inorganic settable ingredient containing compositions.

210, Liquid Purification or Separation, subclasses 749+ for a chemical treatment process.

501, Compositions: Ceramic, subclasses 2+ for devitrified glass - ceramics, subclasses 11+ for glass compositions, and subclass 124 for refractory hydraulic cement containing compositions.

253 In situ vitrification:
This subclass is indented under subclass 252. Processes whereby the melting or sintering to form a glass or glass like substance is done underground.

(1) Note. Included herein is any process that produces the necessary conditions for the melting or sintering of a substance to form a glassy mass under the surface of the earth.

SEE OR SEARCH CLASS:
405, Hydraulic and Earth Engineering, subclass 128.1 for a process or apparatus for soil remediation wherein the process does not destroy or contain hazardous or toxic waste; and subclass 258.1 for the treatment of a condition of the earth not related to remediation, or for the control of an earthen formation for the purpose of reinforcement or stabilization.

254 Contains asbestos:
This subclass is indented under subclass 252. Processes wherein asbestos is present in the hazardous or toxic material.

SEE OR SEARCH CLASS:
106, Compositions: Coating or Plastic, subclasses 600+ for compositions containing asbestos.
162, Paper Making and Fiber Liberation, subclasses 153+ for making a paper like product containing asbestos.
423, Chemistry of Inorganic Compounds, subclass 167 for treating asbestos.

255 Polymer or resin containing (e.g., foam, etc.):
This subclass is indented under subclass 252. Processes wherein a polymer or resin is used in the solidification, vitrification, or cementation.

SEE OR SEARCH CLASS:
264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclasses 4+ for encapsulating normally liquid materials.
427, Coating Processes, subclasses 212+ for particles, flakes, or granules coated or encapsulated.

256 Waste contains heavy metals (e.g., fly ash, flue dust, and incinerator ash):
This subclass is indented under subclass 252. Processes wherein hazardous or toxic waste contains heavy metals.

(1) Note. It is assumed that fly ash, flue dust, and incinerator ash obtained from various sources will contain at least traces of some heavy metal in the absence of disclosure to the contrary.

SEE OR SEARCH CLASS:
106, Compositions: Coating or Plastic, subclasses 286.1+ for inorganic materials only containing at least one metal atom and subclass 287.18 for coating or plastic compositions containing heavy metals.
501, Compositions: Ceramic, subclass 155 for ceramic compositions composed of waste material.

257 And confined in a cement type material (e.g., concrete):
This subclass is indented under subclass 256. Processes wherein waste is used in the production or formulation of a cement type product.

SEE OR SEARCH CLASS:
106, Compositions: Coating or Plastic, subclasses 600+ for alkali metal silicate containing subclasses 638+ for inorganic settable ingredient containing, and subclasses 286.1+ for compositions, coating or plastic which contain only inorganic materials with at least one metal atom. Class 588 contains any formulation of the above materials with hazardous or toxic waste.
405, Hydraulic and Earth Engineering, subclasses 266+ for cementitious grouting.

258 Storage to contain pathogenic organisms (e.g., virus, bacteria, and medical waste):
This subclass is indented under subclass 249. Processes wherein the hazardous or toxic waste contains pathogenic organisms.

SEE OR SEARCH CLASS:

210, Liquid Purification or Separation, subclasses 749+ for a chemical treatment process.

422, Chemical Apparatus and Process Disinfecting, Deodorizing, Preserving, or Sterilizing, subclasses 1+ for disinfecting or sterilizing.

435, Chemistry: Molecular Biology and Microbiology, subclasses 235.1+ for virus, bacteriophage, composition thereof, preparation or purification thereof producing viral units.

259 Secondary containment:

This subclass is indented under subclass 249. Processes wherein more than one form of containment is used (i.e., one form of containment around another form of containment).

SEE OR SEARCH CLASS:

405, Hydraulic and Earth Engineering, subclass 129.1 for subterranean waste disposal, containment, or treatment; and subclass 266 for cementing.

260 With sensing, detecting, or monitoring:

This subclass is indented under subclass 249. Processes wherein the integrity of the containment is observed by chemical, physical, electrical, or optical methods to sense, detect, or monitor movement of waste.

SEE OR SEARCH CLASS:

73, Measuring and Testing, subclasses 40+ and 52 for leakage testing and subclasses 290+ for barrel liquid level indicator.

340, Communications: Electrical, subclasses 3.1 through 3.9 for selective communication having monitoring in addition to control.

261 MISCELLANEOUS:

This subclass is indented under the class definition. Process not provided for above.

CROSS-REFERENCE ART COLLECTIONS

900 APPARATUS:

Apparatus used in the destruction, containment, or conversion of hazardous or toxic waste.

SEE OR SEARCH CLASS:

53, Package Making, subclasses 556+ for the apparatus used in a process for a contraction of a cover by stretching or shrinking and subclasses 580+ for the apparatus for forming or partially forming receptacle and subsequently filling.

100, Presses, appropriate subclasses for presses used in contacting hazardous and toxic waste.

110, Furnaces, subclasses 235+ for incinerators for refuse.

126, Stoves and Furnaces, subclass 452 for the process of general heating using solar heat.

175, Boring or Penetrating the Earth, subclasses 73+ for apparatus used in boring or penetrating the earth.

202, Distillation: Apparatus, for the apparatus used in the processes of distillation.

220, Receptacles, subclasses 62.11+ for multilayer barrier structure.

422, Chemical Apparatus and Process Disinfecting, Deodorizing, Preserving, or Sterilizing, for apparatus acting on hazardous or toxic waste for disinfection or sterilization thereof. See subclasses 243+, particularly subclasses 292+ for treating a solid article or material with a "chemical" in a liquid, gaseous, or vapor state (e.g., steam sterilizers, steam is considered a "chemical" also when it disinfects, sterilizes, deodorizes, or preserves, since steam so used appears to have a function more than mere heating) wherein the article or material is recovered essentially unchanged from the treatment (a "chemical" is defined as a substance which has a function beyond that of another class, per se, e.g., drying, heating, cleaning, etc.; a recitation that a substance disinfects, sterilizes, deodorizes, or preserves will cause the substance to be considered a "chemical" unless accompanied by positive disclosure that the disinfecting, sterilizing, deodorizing, or preserving is done only by a function provided for elsewhere; e.g., heating, etc.), and subclasses 307+ for heat

treating vessel with heating means, not elsewhere provided for.

425, Plastic Article or Earthenware Shaping or Treating: Apparatus, subclass 5 for means of encapsulating normally liquid material, subclasses 6+ for means of making particulate material directly from liquid or molten material, and subclasses 130+ for means of feeding fluent stock from plural sources to common shaping means to form composite product and the rest of the class for shaping of articles.

901 COMPOSITIONS:

Compositions used in the destruction or containment of hazardous or toxic waste.

END